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Thermal Desorption at the Outboard Marine Corporation Superfund Site Waukegan, Illinois

Site Name: Outboard Marine Corporation Superfund Site

Location: Waukegan, Illinois

Period of Operation: January 1992 to June 1992

Cleanup Type: Full-scale cleanup

Vendor: Joseph Hutton SoilTech ATP System, Inc. 800 Canonie Drive Porter, IN 46304 (219) 926-8651

Technology: Thermal Desorption - Rotary kiln desorber with proprietary sand seals - Retort zone temperature 1,207xF - Preheat and retort zone residence time 30-40 minutes - Air emissions controlled using cyclones, baghouse, scrubbers, fractionator, condenser, gas-oil-water separator, and carbon adsorption - Water treated on site using sand filtration, Klensorb~ filtration, ultraviolet oxidation, cartridge filtration, and carbon adsorption

Cleanup Authority: CERCLA - ROD Date: 3/31/89 - PRP Lead

SIC Code: 3363 (Aluminum Die-Casting)

Point of Contact: Bill Bolen - RPM (Cindy Nolan - former RPM) U.S. EPA, Region 5 77 West Jackson Chicago, IL 60604 (312) 353-6316

Contaminants: Polychlorinated Biphenyls (PCBs)-PCB concentrations in material feed to thermal desorber ranged from 2,400 to 23,000 mg/kg PCBs

Waste Source: Other: Discharge to Sewer/Surface Water; Surface Disposal Area

Type/Quantity of Media Treated: Soil and Sediment - 12,755 tons treated - 12.9% moisture; pH of 8.59

Purpose/Significance of Application: This application was an early application of SoilTech's ATP system for treating soil and sediment at a Superfund Site contaminated with PCBs.

Regulatory Requirements/Cleanup Goals: - Soil and Sediment - PCBs: 97% removal by mass - Air - PCBs: Destruction and Removal Efficiency (DRE) of 99.9999%, Dioxins/Furans: 30 ng/dscm

Results: Soil and Sediment - Achieved PCB cleanup goal for soil and sediment; average PCB removal efficiency of 99.98%; PCB concentrations in treated soil ranged from 0.4 mg/kg to 8.9 mg/kg; most samples less than 2 mg/kg Air - Stack gas requirements met for PCBs; stack gas requirements met for dioxins/furans after system modifications

Cost Factors: - $2,474,000 - Actual total costs for cost elements directly associated with treatment (including solids preparation and handling, startup/testing/permits, operation, capital equipment, and demobilization) - $900,000 for before-treatment costs (including mobilization and preparatory work, and monitoring, sampling, testing, and analysis)

Description: Outboard Marine Corporation (OMC), located on Lake Michigan, performed marine product manufacturing operations at the site. Contamination of the soil and sediments at the site resulted from the discharge of hydraulic fluid containing PCBs through floor drains which discharged to several areas at the site and into Waukegan Harbor. An estimated 700,000 pounds of PCBs were discharged to the OMC site and 300,000 pounds of PCBs were discharged to Waukegan Harbor. Based on a 1989 Consent Decree and Record of Decision, remedial activities selected for the site included excavation, stockpiling, and treatment of soil and sediment contaminated with PCBs. A cleanup goal for PCBs in soil and sediment of 97% removal was specified in the 1989 ROD.

SoilTech's mobile Anaerobic Thermal Processor (ATP) system was selected for treating the PCB-contaminated soil and sediment at OMC. The ATP system was operated at the site from January 23, 1992 until June 23, 1992. During this time, 12,755 tons of PCB-contaminated soils and sediments were treated. The ATP system met the cleanup goal for PCBs in soil and sediment by achieving an average removal efficiency of 99.98% for total PCB concentrations. PCBs in treated soil ranged from 0.4 to 8.9 mg/kg. The PCB DRE of 99.9999% and total dioxin and furan stack emission requirements of 30 ng/dscm were met during the cleanup.

During the proof-of-process period (January 23 until March 5), the DRE for PCBs was not met, and EPA shut the system down. From March 5 until May 30, SoilTech made modifications to the system, and the stack gas emissions requirements were met during the remainder of the soil cleanup. An EPA SITE Demonstration was conducted at the OMC site in June 1992. During this demonstration, 255 tons of soil and sediment were treated. The total cost for the full-scale application of thermal desorption at the OMC site was $2,474,000.

Key Words:

- Discharge to Sewer or Surface Water
- Surface Disposal Area
- CERCLA
- Full-scale

Technology/Technologies:

- Thermal Desorption

Media:

- Soil
- Sediment

Contaminant(s):

- Organics
- Semivolatiles-Halogenated
- PCBs

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